CLAIMS

1. A sintered body for thermistor elements containing Sr, Y, Mn, Al, Fe, and O, which is characterized in that not only crystal phases of a perovskite type oxide and a garnet type oxide are contained, but also a crystal phase of of an Sr-Al based oxide or an Sr-Fe based oxide or both is contained.

2. The sintered body for thermistor elements according to claim 1, wherein $FeYO_3$ and/or $AlYO_3$ is selected as said perovskite type oxide, and at least one compound selected from the group consisting of $Y_3Al_5O_{12}$, $Al_2Fe_3Y_3O_{12}$, and $Al_3Fe_2Y_3O_{12}$ is selected as said garnet type oxide, respectively by the powder X-ray diffraction analysis.

3. The sintered body for thermistor elements according to claim 1, wherein in said perovskite type oxide and/or said garnet type oxide, there is Sr solid solution in the Y site, Mn and/or Fe solid solution in the Al site, and Al and/or Mn solid solution in the Fe site.

4. The sintered body for thermistor elements according to claim 1, wherein when the mole number of Sr is defined as x, the mole number of Y is defined as $(1 - x)$, the mole number of Mn is defined as y, the mole number of Al is defined as z, and the mole number of Fe is defined as $(1 - y - z)$, x, y and z have the relationship of $0.090 \leq x \leq 0.178$, $0.090 \leq y \leq 0.178$, $z \geq 0.275$, and $(1 - y - z) \geq 0.025$.

5. The sintered body for thermistor elements according to claim 1, which also contains Si.

6. The sintered body for thermistor elements according to claim 5, wherein $FeYO_3$ and/or $AlYO_3$ is defined as said perovskite type oxide, and at least one compound selected from the group consisting of $Y_3Al_5O_{12}$, $Al_2Fe_3Y_3O_{12}$, and $Al_3Fe_2Y_3O_{12}$ is selected as said garnet type oxide, by power X-ray diffraction analysis.

7. The sintered body for thermistor elements according to claim 5, wherein in said perovskite type oxide and/or said garnet type oxide, there is Sr solid solution in the Y site, Mn and/or Fe solid solution in the Al site, and Al and/or Mn solid solution in the Fe site.

8. The sintered body for thermistor elements according to claim 5, wherein when the mole number of Sr is defined as x, the mole number of Y is defined as (1 - x), the mole number of Mn is defined as y, the mole number of Al is defined as z, and the mole number of Fe is defined as (1 - y - z), x, y and z have the relationship of $0.090 \leq x \leq 0.178$, $0.090 \leq y \leq 0.178$, $z \geq 0.275$, and $(1 - y - z) \geq 0.025$.

9. A process for producing a sintered body for thermistor elements, which is characterized by mixing respective raw material powders containing elemental Sr, Y, Mn, Al, and Fe and calcining the mixture to form a calcined powder; subsequently molding a thermistor forming powder comprising

a mixture of this calcined powder with a sintering assistant containing at least elemental Si; and then calcining the resulting molded compact to obtain a sintered body for thermistor element containing not only crystal phases of a perovskite type oxide and a garnet type oxide but also a crystal phase of an Sr-Al based oxide or an Sr-Fe based oxide or both.

10. A process for producing a sintered body for thermistor elements, which is characterized by mixing respective raw material powders substantially free from elemental Si and containing elemental Sr, Y, Mn, Al, and Fe, and calcining the mixture to form a calcined powder; subsequently molding the thermistor forming powder obtained by pulverizing this calcined powder; and then calcining the resulting molded compact to obtain a sintered body for thermistor elements containing not only crystal phases of a perovskite type oxide and a garnet type oxide but also a crystal phase of an Sr-Al based oxide or an Sr-Fe based oxide or both, and substantially free from Si.

11. A thermistor element, which is characterized by using a sintered body for thermistor elements containing Sr, Y, Mn, Al, Fe, and O, wherein not only crystal phases of a perovskite type oxide and a garnet type oxide are contained, but also a crystal phase of an Sr-Al based oxide or an Sr-Fe based oxide or both is contained.

12. A temperature sensor, which is characterized by using

a sintered body for thermistor elements containing Sr, Y, Mn, Al, Fe, and O, wherein not only respective crystal phases of a perovskite type oxide and a garnet type oxide are contained, but also a crystal phase of an Sr-Al based oxide or an Sr-Fe based oxide or both is contained.